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The Dow Chemical Company P.O. BOX 1967 Midland, MI 48641			ZEMEL, IRINA SOPJIA	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* GILBERT BOUQUET and  
RONY S. VANSPEYBROECK

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Appeal 2009-009396  
Application 10/543,121  
Technology Center 1700

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Before MICHAEL P. COLAIANNI, LINDA M. GAUDETTE, and  
MARK NAGUMO, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision<sup>2</sup> finally rejecting claims 1-13 and 17-19, the only claims pending in the Application. (Br.<sup>3</sup> 5.) We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

The invention is directed to a process which is useful in preparing high impact polystyrene (HIPS) and acrylonitrile-butadiene-styrene polymers (ABS) for use in a variety of applications including injection molding and thermoforming of refrigerator liners, household appliances, toys, automotive applications, and furniture. (Spec. 9:1-4.) The rubber modified polymers produced by the process of the present invention are said to have improved welding properties when compared to other rubber modified polymers of the prior art. (Spec. 9:6-8.)

Claim 1, the sole independent claim on appeal, is representative of the claimed invention and is reproduced below from the Claims Appendix to the Appeal Brief:

1. A mass/solution polymerization process utilizing a functionalized rubber to produce a rubber modified polymer from a vinyl aromatic monomer comprising polymerizing the vinyl aromatic monomer in the presence of a rubber, wherein the rubber comprises a functionalized diene rubber having:

- a) a solution viscosity of from 5 to less than 50 centipoise (cps), and
- b) at least one functional group per rubber molecule which enables controlled radical polymerization;

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<sup>2</sup> Final Office Action ("Final"), mailed Jan. 25, 2008.

<sup>3</sup> Appeal Brief, mailed Jun. 24, 2008.

such that grafted rubber particles are formed and dispersed within a matrix comprising polymerized vinyl aromatic monomer and have a broad monomodal size distribution.

The Examiner maintains (Ans.<sup>4</sup> 4-7), and Appellants request review of (Br. 8), the sole ground of rejection: claims 1-13 and 17-19 under 35 U.S.C. § 103 as unpatentable over Priddy in view of EP ‘820.

The arguments of the Examiner and Appellants raise the following issue for our consideration:

Does a preponderance of the evidence favor the Examiner’s conclusion that it would have been obvious to have used a functionalized diene rubber having a solution viscosity of from 5 to less than 50 cps in Priddy’s process?

We answer this question in the affirmative based on the facts and reasons relied on by the Examiner in the Answer, pages 4-12, which we adopt as our own.

It is undisputed that neither Priddy nor EP ‘820 explicitly discloses the solution viscosities of the rubbers used in their processes. (*See, e.g.*, Ans. 6-7.) Appellants contend that solution viscosity is dependent on several variables and that the rubbers used by Priddy and EP ‘820 would not necessarily or inherently possess this property. (Br. 10.)

Priddy and Appellants disclose the use of the same vinyl aromatic monomers (*compare* Priddy, col. 1, ll. 61-65 *with* Spec. 3:25-27) and methods of preparing rubber reinforced polymers (*compare* Priddy, col. 6, ll. 54-62 *with* Spec. 6:19-23). Priddy and Appellants provide the same generic

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<sup>4</sup> Amended Examiner’s Answer, mailed Feb. 3, 2009.

descriptions of rubbers suitable for use in the invention (*compare, e.g.* Priddy, col. 2, ll. 21-30 *with* Spec. 4:12-13), and use the same functional groups for controlling radical polymerization (*see* Spec. 5:21-25 and 6:15-16 (citing Priddy)). While the Specification contemplates the use of a combination of functionalized and non-functionalized rubbers (Spec. 5:29-30), it is noted that “[f]eed based on non-functionalized rubber results in larger particles and very low intrinsic gloss, while small rubber particles and good intrinsic gloss are obtained using the functionalized rubber.” (Spec. 12:7-9.) At the time of the invention, it was known in the art that use of small rubber particles in the production of rubber modified polymers, provides a high gloss product. (Spec. 1:13-14; EP ‘820 5:15-16.) Methods of particle sizing were also well known to those of ordinary skill in the art. (Priddy, col. 8, ll. 66-67; EP ‘820 4:50-51.)

According to EP ‘820, in monomodal compositions, the rubber particle “sizes can vary from 0.05 to 10 micrometers.” (EP ‘820 4:55.) Priddy’s method is said to be useful in producing “transparent rubber reinforced polymers . . . typically contain[ing] dense rubber particles having a volume average particle size of less than 0.1 $\mu$ .” (Col. 8, ll. 62-65.) The rubber particle sizes in Specification Examples 1-5 range from .39 to .46  $\mu$ m. (Spec. 10-14, Tables 2 & 4.)

Appellants concede that the use of a lower rubber solution viscosity is one approach to producing a smaller rubber particle size. (Br. 10.) Appellants have produced a graph showing a relationship between molecular weight (“Mw”) and solution viscosity for butadiene rubbers (Aff. 3, Fig. 1). (Br. 10, ll. 4-6.) The disclosed molecular weights of Priddy’s rubbers (col.

6, ll. 42-46 (“typically from about 20,000 to about 300,000, preferably from about 50,000 to about 250,000, more preferably from about 75,000 to about 200,000 and most preferably from about 100,000 to about 150,000”))

overlap the molecular weights of the rubbers used in Examples 1-5 of the Specification (Aff.<sup>5</sup> 2 (indicating that the molecular weights ranged from 90,000 to 193,000)). (See Ans. 10.)

Appellants note that in an exemplary embodiment, Priddy utilizes a rubber having a much lower Mw than Appellants’ rubber, and rely on Dr. Bouquet’s graph (Aff. 3, Fig. 1) to establish that this rubber would have a solution viscosity which is significantly less than 5 cps. (Br. 10.) On the other hand, Appellants argue that “viscosity of a rubber is a function of more than just its molecular weight” and that “one skilled in the art can not predict whether the molecular weight rubbers of Priddy will fall within the Applicant’s selected range” of solution viscosities (*id.*). (See Ans. 9-10 (discussing these arguments).) Appellants have not provided any actual test data which establishes that the rubber used in Priddy’s exemplary embodiment has a solution viscosity lower than 5 cps and/or that it would not have the same desirable properties (e.g., high gloss) achieved using a functionalized rubber as claimed. (See *generally*, Spec. and Br.)

Appellants have not provided evidence which establishes that a rubber having a molecular weight in Priddy’s preferred range with a particle size of less than .1  $\mu$ m would not have a solution viscosity as claimed in appealed claim 1. (Ans. 12; *see generally*, Spec. and Br.)

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<sup>5</sup> (Evidence Appendix, Affidavit of Gilbert C. Bouquet under 37 C.F.R. § 1.132, executed on Oct. 10, 2007.)

Where . . . the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. Whether the rejection is based on ‘inherency’ under 35 U.S.C. § 102, on ‘prima facie obviousness’ under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO’s inability to manufacture products or to obtain and compare prior art products.

*In re Best*, 562 F.2d 1252, 1255 (CCPA 1977) (citations omitted). *See also, In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

Given the similarities in the products and processes used by Appellants and Priddy, as evidenced by the Examiner’s findings (*see generally*, Ans. 4-7), it was reasonable for the Examiner to conclude that it would have been obvious to have used a rubber having Appellants’ claimed solution viscosity in Priddy’s process (*see* Ans. 7). The burden was thus shifted to Appellants to establish the contrary. As indicated above (*supra* p. 5), and more fully explained in the Answer (pp. 10-12), Appellants have not provided any actual comparison testing of Priddy’s rubbers with those of Appellants. The comparison testing in the Specification and in the Bouquet Affidavit does not represent a comparison between the claimed invention and closest prior art and, therefore, fails to convincingly establish that the Examiner’s proposed prior art combination would not result in a method which uses a rubber having Appellants’ claimed solution viscosity.

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In sum, we conclude that a preponderance of the evidence favors the Examiner's obviousness determination. Therefore, we affirm the Examiner's decision to reject claims 1-13 and 17-19.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED

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